Please sign the following oath:

The answers on this test are entirely my own work. I neither gave nor received any aid while taking this test. I will not discuss the questions on this test until after 5:00 p.m. on September 27, 2005.

__________________________________________
Signature

Any test turned in without a signature indicating that you have taken this oath will be assigned a grade of zero.

Graph Instructions

When drawing diagrams, the following rules apply:

a. Completely, clearly and accurately label all axis, lines, curves, and equilibrium points.

b. The original diagram and equilibrium points MUST be drawn in black.

c. The first shift of any line(s) and the new equilibrium points MUST be drawn in red.

d. Any subsequent shifts in curves and new equilibrium points MUST be drawn in another color, preferably blue and then green.

Do NOT open this test until instructed to do so.
A. Multiple Choice Questions. Circle the letter corresponding to the best answer. (30 points.)

1. Suppose a war destroys half of the capital stock. Now, all of the following are true EXCEPT:
   a. Economic growth depends on the distance to the steady state.
   b. Economic growth is greater than the labor force growth rate.
   c. Economic growth will be lower in the new steady state.
   d. The time to converge to the steady state will depend on the shape of the production function.

2. Income per worker in Ethiopia is $1/35$ of US income per worker in the U.S. According to the principle of *conditional* convergence:
   a. Ethiopia will grow faster than the US in the future since it is poorer.
   b. Ethiopia will grow slower than the US in the future.
   c. Ethiopia will become as rich as the US.
   d. Ethiopia will grow faster than the US if it adopts good economic policies.

3. One recent economic study of 125 economies over the period 1960-1985 revealed “a definite positive correlation between investment rates and economic growth rates”. This finding:
   a. Contradicts the Solow model.
   b. Can be consistent with the Solow model.
   d. Contradicts the growth accounting formula.

4. Although the U.S. is in a steady state, economic growth over the past century has typically been about 2% higher than the rate labor force growth. This is due to:
   b. Technological progress.
   c. Capital inflows to the U.S.
   d. Higher money growth leading to greater economic prosperity.
5. Today, China is poorer than the U.S. was in 1900. Investment in China is 43% of GDP (much higher than the in the U.S.) while labor force growth is 0.6% per year (lower than in the U.S.). Assuming similar depreciation rates and technology, conditional convergence suggests:

   a. China will grow faster than the U.S. and eventually become richer.
   b. China will grow faster than the U.S. but will never be as rich.
   c. China will grow slower than the U.S. and will never be as rich.
   d. Relative growth rates are indeterminate.

6. In 2004 the U.S. trade deficit was $600 billion. Private savings were $2,000 billion. And the budget deficit was $400 billion. Then investment spending in 2004 was:

   a. $2,200 billion.
   b. $1,000 billion.
   c. $3,000 billion.
   d. $1,800 billion.
   e. Indeterminate.

7. Less than 5% of global private health R&D is spent on diseases of poor countries (such as malaria). According to New Growth Theory, this would be mainly due to:

   a. The fact that diseases of poor countries are hard to cure.
   b. Poor intellectual property rights (patents and copyrights) in developing countries.
   c. Smaller market size in developing countries.
   d. Lower saving rates in developing countries.

8. Labor force growth rates tend to fall as a country becomes richer. Compared with the standard Solow model this would lead to:

   a. Greater income differences between rich and poor countries.
   b. Smaller income differences between rich and poor countries.
   c. Faster economic growth rates as a country approaches steady state.
   d. Less favorable steady states.
9. Suppose technological progress increases by 1% and, as a result, firms increase their capital stock by 10%. Then, according to the growth accounting formula, the better technology ultimately increases economic growth by:

   a. 1%.
   b. 11%.
   c. 9%.
   d. 8%.
   e. 4%.

10. Suppose an economy is at its steady state with technology, $A$, fixed. Labor force growth is 3% and money growth is 9%. Then, according to the quantity theory of money, the inflation rate is:

   a. 9%.
   b. 3%.
   c. 6%.
   d. 12%.
   e. Indeterminate.
B. Solow Growth Model Problems. Answer BOTH of the following questions.

1. With the California economy at a steady state, Tom Campbell is returning to the Haas School in November after serving as Governor Schwarzenegger’s Director of Finance for the past 18 months. The Governor is quite distressed by Campbell’s leaving. As revenge, Schwarzenegger is reverting to his role as the Terminator, threatening to either (a) instantly destroy half of the capital stock in California or (b) instantly destroy half the level of technology, A, in California. (40 points.)

   a. Use a basic Solow Growth Model to clearly show what effects instantly destroying half of the capital stock would have on California’s level of income-per-worker.
b. Provide a brief economic explanation of the adjustment process that occurs during the transition period. Be sure to discuss what happens to the level of income-per-worker and to the rate of the economic growth during both the transition period and in the long run.
c. Use a basic Solow Growth Model to clearly show what effects instantly destroying half of the level of technology would have on California’s level of income-per-worker.
d. Provide a brief economic explanation of the adjustment process that occurs during the transition period. Be sure to discuss what happens to the level of income-per-worker and to the rate of the economic growth during both the transition period and in the long run.
e. Which scenario (a or b or either) would you prefer if you cared only about economic growth in California in the short-term? Explain your answer.

f. Which scenario (a or b or either) would you prefer if you cared only about economic growth in California in the long-term? Explain your answer.

g. Which scenario (a or b or either) would you prefer if you cared only about the standard of living in California in the long-term? Explain your answer.
2. In 1990, Ireland was at its steady state but with a standard of living that was substantially below the levels in the rest of Europe. In an effort to narrow the differences, the government embarked on an aggressive program of economic deregulation. In addition, the Irish government reduced tax rates. As a result of the more favorable economic environment, a substantial number of highly-educated Irish citizens working abroad returned to Ireland to work and start new businesses. Assume that these Irish citizens returned in 1990 and that the effects from the economic deregulation are larger than the effects of reduced tax rates. (30 points.)

   a. Use a basic Solow Growth Model to clearly show what effects these events will have on the Ireland’s level of income-per-worker.
b. Provide a brief economic explanation of the adjustment process that occurs during the transition period. Be sure to discuss what happens to the level of income-per-worker and to the rate of economic growth during both the transition period and in the long run.